CAUTION: SERIOUS LEARNING AHEAD

PUNGGOL GREEN PRIMARY
PARENT LEARNING FEST 2019

MID PRIMARY
MATHEMATICS WORKSHOP
USE OF MODEL DRAWING IN SOLVING WORD PROBLEMS

26 January 2019

Presenters: Ms Elsie Tan & Mrs Shannon Loh
AGENDA

- Introduction
- Tips on use of model drawing
- Common types of models at P3 & P4
AGENDA

• Introduction
• Tips on use of model drawing
• Common types of models at P3 & P4
MATH
Mental Abuse To Humans

Math problems are weird;
"I had 10 chocolate bars and ate 9. What do I have now?"
"Oh, I don't know, DIABETES maybe?"

GIRLFROMPARIS | TUMBLR
MATH
is so much fun!

PGPS MID PRIMARY MATHEMATICS WORKSHOP
PARENT LEARNING FEST 26 JANUARY 2019
OBJECTIVE OF WORKSHOP

To demonstrate the use of model drawing in solving mathematical word problems
An extract-

Model drawing is a powerful problem-solving approach. Using the bar model, a child represents mathematical relationships in a problem in a pictorial form. The pictorial form helps him/her understand the problem and plan the steps for the solution. This approach is developmentally sound for young children, and is recognised internationally as an effective way for the children to have early exposure to algebraic concepts and to learn problem solving.

Q3: Is the learning of model method important?

Model drawing is a powerful problem-solving approach. Using the bar model, a child represents mathematical relationships in a problem in a pictorial form. The pictorial form helps him/her understand the problem and plan the steps for the solution. This approach is developmentally sound for young children, and is recognised internationally as an effective way for the children to have early exposure to algebraic concepts and to learn problem solving. Besides solving problems, model drawing also supports the learning of fractions, ratio and percentages. Children will find the model approach useful when they solve problems involving these concepts in upper primary. Here is an example of a word problem using the model method. The word problem involves the concepts of fraction and ratio. Alex gave 5/7 of his marbles to his sister. He gave the remaining marbles to his friends, Sam and Ann in the ratio 1:3. Ann received 45 marbles from Alex. How many marbles had Alex at first?

```
Sister       | Sam       | Ann       
-------------|-----------|-----------
|            |           |           |
| 3 units    | 45        |           |
| 1 unit     | 45 ÷ 3    |           |
|            | 15        |           |
| 14 units   | 15 × 14   |           |
|            | 210       |           |
```

Alice had 210 marbles at first.
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MODEL DRAWING AT PRIMARY 1

Part-whole model
Jane has 4 balls. Her mother gives her 3 more. How many balls does Jane have now?
TIP 1 FOR MODEL DRAWING

- Size of bar should correspond with the represented quantity i.e. bigger bar for larger quantity vice versa.
- Bars should be proportional in size.

E.g. There are 280 English books and 170 Chinese books in the library.
TIP 2 FOR MODEL DRAWING

- Bars should all be aligned to the left, with the same starting point for ease of comparison.
- Use dotted lines to show a partial unit/units that have been removed.
- Use shading to differentiate different unit groups to avoid confusion.

E.g. Sally baked 47 fewer cupcakes than Nurul.
TIP 3 FOR MODEL DRAWING

- Braces or arrows should be used to label the different parts of the model
- Include question mark(s) to illustrate the part(s) that is/are to be found

E.g. Mr Lim spent $370 on a printer and $690 on a handphone. How much did he spend altogether?

$370

$690
TIP 4 FOR MODEL DRAWING

➢ Repeated bars of the same units should be of the same size.

E.g. Ahmad has 5 times as much money as Jack.

Ahmad

Jack
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COMMON TYPES OF MODELS AT P3 & P4

Part-whole model
Comparison model
Fraction of a set model
Part-whole model
Comparison model
Fraction of a set model
LET’S LOOK AT SOME QUESTIONS
P3 WORD PROBLEM (PART-WHOLE MODEL)

June had $120. Pat had $200. How much money did they have altogether?

Solution:
120 + 200 = 320

Answer: $320
Ahmad spent $999 on a laptop and $380 on a camera. How much did he spend altogether?

\[ \text{Solution} \]
\[ 999 + 380 = 1379 \]

\[ \text{Answer: } $1379 \]
Billy had 430 stamps. Muthu had 160 fewer stamps than Billy. Shafiq had 40 stamps more than Muthu. How many stamps did Shafiq have?

Solution

\[ 430 - 160 = 270 \text{ (Muthu)} \]
\[ 270 + 40 = 310 \text{ (Shafiq)} \]

Answer: 310 stamps
Tom had 200 stickers. Ali had 50 fewer stickers than Tom. Devi had 80 stickers less than Ali. How many stamps did Devi have?

Solution:
200 – 50 = 150 (Ali)
150 – 80 = 70 (Devi)

Answer: 70 stickers
Judy had $2440 more than Don at first. After spending $430, she had 4 times as much as Don. How much money did Judy have at first?

**Solution**

3 units = $2440 - $430 = $2010

1 unit = $2010 ÷ 3 = $670

$2440 + $670 = $3110

Answer: $3110
LET'S PRACTICE

Mei Ling had $2000 more than Judy at first. After spending $500, she had 3 times as much as Judy. How much money did Mei Ling have at first?

Solution
2 units = $2000 - $500
= $1500
1 unit = $1500 ÷ 2
= $750
$2000 + $750 = $2750
Answer: $2750
Mrs Lim bought some green bean paste. She used \( \frac{5}{6} \) of the paste and had 25 g of paste left. How many grams of green bean paste did she buy?

Solution:
1 unit = 25 g
6 units = 25 \times 6
= 150 g

Answer: 150 g
Mrs Chan had 240 g of flour. She used $\frac{3}{8}$ of the flour to bake a cake. How many grams of flour did she use?

**Solution**

8 units = 240 g
1 unit = $\frac{240}{8}$
= 30 g
3 units = 30 x 3
= 90 g

Answer: 90 g
A book and a magazine cost $7.20. Judy bought 2 such books and 4 such magazines for $20.20. Find the cost of 1 magazine.

Solution
2 sets of B + M
= $7.20 x 2
= $14.40

2 magazines
= $20.20 - $14.40
= $5.80

1 magazine
= $5.80 ÷ 2
= $2.90
LET'S PRACTICE

Terry bought a cap and 2 coats for $62.30. Each coat costs 3 times as much as a cap. How much did 4 coats cost?

Solution

7 caps = $62.30
1 cap = $62.30 ÷ 7
= $8.90

1 coat (3 caps)
= $8.90 x 3
= $26.70

4 coats = $26.70 x 4
= $106.80
THANK YOU

Q & A Session
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<tr>
<th>Time</th>
<th>Subject</th>
<th>Duration</th>
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<td>EL P5 &amp; P6</td>
<td>1 hr</td>
<td>PAL Room 1&amp;2</td>
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<td>CL P1 &amp; P2</td>
<td>1 hr</td>
<td>Music Room 1 &amp; 2</td>
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<td>CL P3 &amp; P4</td>
<td>1 hr</td>
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<td>TL P1 – P4</td>
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